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Practice Test-1(Reaction Kinetics)



10



7 min



01-May-2021



0 sec

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SAEED MDCAT TEAM

0/10



SAEEDMDCAT

0.0%



## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



1/10

Q : The rate of reactions between two specific time intervals is called



Average rate of a reaction



Rate of a reactions



Instantaneous rate of reaction



Velocity constant

Explanation

The rate of reactions between two specific time intervals is called average rate of a reaction



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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



2/10

Q : Slowest step in the reaction is called

A

Elementary step

B

Rate law

C

Rate determining step

D

Order of reaction

Explanation

Slowest step in the reaction is called rate determining step. It is used if reaction proceed in more than one step

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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



3/10

Q : Spectrometry is applied for rate determining when



Reactants or products absorb U.V / VIS or I.R radiations



Reaction involve ion



Reaction involve change in volume



One of the substance is optically active

Explanation

Spectrometry is applied for rate determining when reactants or products absorb U.V / VIS or I.R radiations

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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



4/10

Q : One of the following is not a physical method for determination of rate of reaction

A

Spectrometry

B

Refractrometry

C

Electrical Conductivity

D

Titrimetry

Explanation

Titrimetry is chemical method to find the rate of reaction

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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



5/10

Q : Which property of liquid is measured by polarimeter

A

conductance

B

refractive index

C

optical activity

D

change in volume

Explanation

polarimeter is used to measure the optical rotation of plan polarized light.



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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



6/10

Q : Generally by increasing temperature rate of chemical reaction increase. it is due to

A

Greater velocity of molecules

B

Greater number of collision

C

Greater number of molecule having activation energy

D

None of the above

Explanation

By increasing in temperature number of those molecules increase which have equal or more energy than activation energy.

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## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



7/10

Q : The units of slope are in

A

Degree

B

Kelvin

C

Per Kelvin

D

$\text{JK}^{-1}$

Explanation

$$\frac{\text{Jmol}^{-1}}{\text{JK}^{-1}\text{mol}^{-1}} = \frac{1}{\text{K}} = \text{K}^{-1}$$





## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



8/10

Q : The rate of a chemical reaction is independent of

A

Nature of reactant

B

Temperature

C

Molecularity

D

Concentration of reactant

Explanation

The rate of a chemical reaction is independent of Molecularity



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9



## Practice Test-1(Reaction Kinetics)



Correct



Unattempted



Incorrect



9/10

Q : In Rate =  $k[A][B]$  the second order reaction become \_\_\_\_ if [A] is in large excess



2<sup>nd</sup> order



3<sup>rd</sup> order



Zero order



Pseudo 1<sup>st</sup> order

Explanation

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It is pseudo first order because one reactant '[A]' is taken in excess



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correct



10/10

Q:

A reaction has rate law expression as

$$\text{Rate} = k[A]^{3/2} [B]^{-1/2}$$

The order of reaction is



1



2



3.2



-1/2

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Explanation



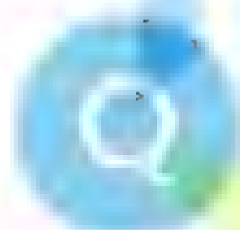
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O.R = sum of exponents of rate equation

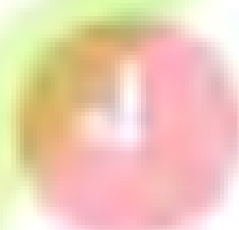
$$= 3/2 - 1/2 = 1$$



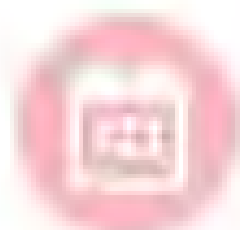
Practice Test-2 (Reaction Kinetics)



10



7:00:00



01-May-2021



0:00:00

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0/10

0.00%



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Q : If  $E_f$  and  $E_b$  are the activation energies for forward and backward reaction respectively. How these can be compared for the exothermic reaction.

- ☐  $E_f > E_b$
- ☒  $E_f < E_b$
- ☐  $E_f = E_b$
- ☐ No prediction can be made

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Q : For endothermic reaction,  $E_a$  is activation energy in KJ/mole. The maximum value of enthalpy of reaction ( $\Delta H$ ) will be

- ☐ Less than  $E_a$
- ☒ More than  $E_a$
- ☐ Equal to  $E_a$
- ☐ Zero

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Q : Energy of activation for backward reaction is less than forward reaction for \_\_\_\_\_ reaction

☐ Endothermic

☒ Exothermic

☐ Moderate

☐ Fast

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Q : The value of activation energy of chemical reaction is primarily determined by

- ☒ Nature of reacting species
- ☐ Temperature
- ☐ Number of collisions per unit time
- ☐ Concentration of species

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Q : The number of colliding molecules of different gases calculated from kinetic theory of gases is of magnitude of \_\_\_\_\_ per litre per second

☐  $10^{32}$

☒  $10^{-32}$

☐ 105

☐  $10^{-5}$

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Q : The minimum amount of energy required for the reacting molecules to undergo reaction is

- ☐ Potential energy
- ☐ Kinetic energy
- ☐ Thermal energy
- ☐ Activation energy

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Q:

Difference of energy between reactants and transition state is called

- ☐ Enthalpy of react on
- ☐ Kinetic energy
- ☐ Activation energy
- ☐ Internal energy

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Q:

In a reaction  $2X + Y \longrightarrow M + N$

if the concentration of Y kept constant and that of X is trippled. The reaction will be

- ☒ increase 3 times
- ☐ increase 27 times
- ☐ increase 9 times
- ☐ increase 27 times

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Q : Which statement is incorrect

- ☐ Enzymes are stereo specific
- ☐ Enzymes are highly specific
- ☐ Enzymes can be crystallized
- ☐ Enzyme can resist the radiation

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Q : The enzyme which can catalyze the conversion of glucose to ethyl alcohol is

- ☒ Zymase
- ☐ Invertase
- ☐ Urease
- ☐ Maltase

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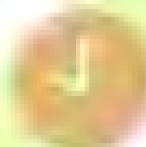
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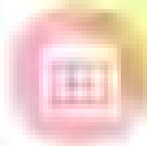


## QUIZ RESULT

Practice Test-2(Reaction Kinetics)



Time



Score



C/10



0%

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Correct



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Incorrect



1/10

Q : If  $E_f$  and  $E_b$  are the activation energies for forward and backward reaction respectively How these can be compared for the exothermic reaction.



$E_f > E_b$



$E_f < E_b$



$E_f = E_b$



No prediction can be made

Explanation

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For exothermic reaction,  $E_b$  is always greater than  $E_f$



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Q : For endothermic reaction,  $E_a$  is activation energy in KJ/mole. The maximum value of enthalpy of reaction ( $\Delta H$ ) will be



Less than  $E_a$



More than  $E_a$



Equal to  $E_a$



Zero

Explanation



$\Delta H$  is always less than  $E_a$  of endothermic reaction



Q : Energy of activation for backward reaction is less than forward reaction for \_\_\_\_\_ reaction



Endothermic



Exothermic

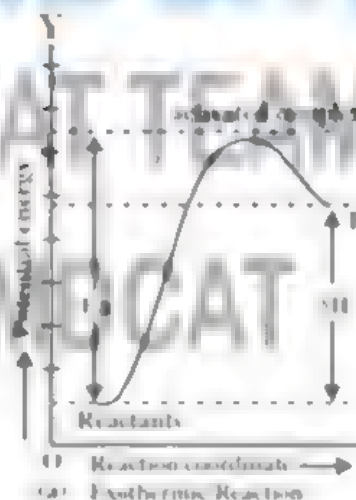
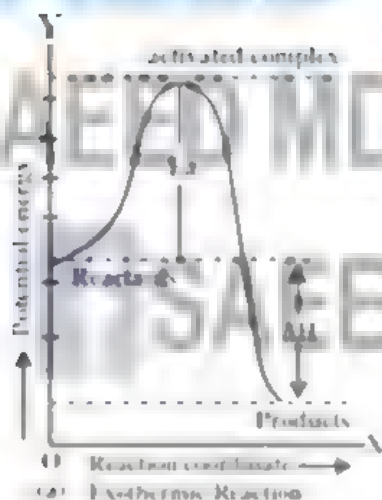


Moderate



Fast

Explanation





Correct



Unattempted



Incorrect



4/10

Q : The value of activation energy of chemical reaction is primarily determined by



Nature of reacting species



Temperature



Number of collisions per unit time



Concentration of species

Explanation

Number of collisions per unit time, primarily determines the value of activation energy of chemical reaction.



Correct



Score: 5/10



Incorrect



5/10

Q : The number of colliding molecules of different gases calculated from kinetic theory of gases is of magnitude of \_\_\_\_\_ per litre per second



$10^{32}$



$10^{-32}$



105



$10^{-5}$

SAEED MDCAT

Explanation

SAEED MDCAT TEAM

The number of colliding molecules of different gases calculated from kinetic theory of gases is of magnitude of  $10^{32}$  per litre per second



Correct



Unattempted



Incorrect



6/10

Q : The minimum amount of energy required for the reacting molecules to undergo reaction is



Potential energy



Kinetic energy



Thermal energy



Activation energy

Explanation

SAEED MDCAT TEAM

The minimum amount of energy required for the reacting molecules to undergo reaction is Activation energy

Q:

Difference of energy between reactants and transition state is called

Enthalpy of react on

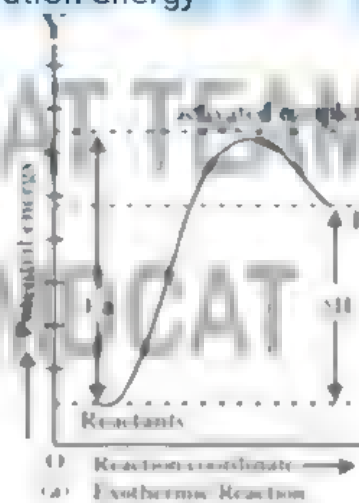
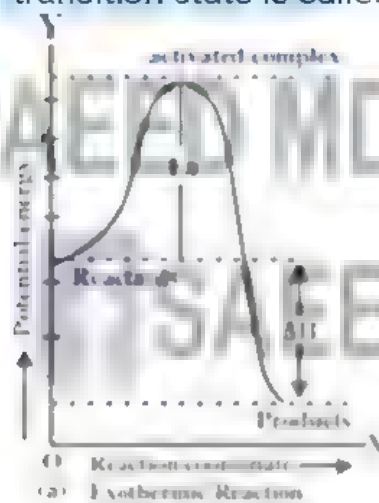
Kinetic energy

Activation energy

Internal energy

Explanation

Difference of energy between reactants and transition state is called Activation energy





Q:

In a reaction  $2X + Y \longrightarrow M + N$

if the concentration of Y kept constant and that of X is tripled. The reaction will be

- ☐ increase 3 times
- ☐ increase 27 times
- ☒ increase 9 times
- ☐ increase 27 times

Explanation

Rate reaction for this equation will be

$$\text{Rate} = k[X]^2$$

$$\text{Rate} = k[3]^2$$

$$\text{Rate} = k9$$

while value of Y is constant



correct



9/10

Q : Which statement is incorrect



Enzymes are stereo specific



Enzymes are highly specific



Enzymes can be crystallized



Enzyme can resist the radiation

Explanation

Enzyme can denature by radiation.



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Correct



10/10

Q : The enzyme which can catalyze the conversion of glucose to ethyl alcohol is



Zymase



Invertase



Urease



Maltase

Explanation

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Enzyme which can catalyze the conversion of glucose to ethyl alcohol is Zymase



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## QUIZZES

Practice test -1 (Thermochemistry)

7 questions

7 min

100%

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Q : Which of the following sets constitutes of all the state functions of system.

- ☐ Temperature, Pressure, Work
- ☐ Enthalpy, Work, Pressure
- ☐ Enthalpy, Entropy, Internal Energy
- ☐ Heat, Enthalpy, Volume

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SAEED MDCAT TEAM

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Q : The study of heat changes accompanied by a chemical reaction is called as

- ☐ Thermodynamics
- ☒ Thermochemistry
- ☐ Chemical kinetics
- ☐ All of these

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SAEED MDCAT TEAM

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Q : If an endothermic reaction is allowed to take place very rapidly in air the temperature of the surrounding air

- ☐ Remain constant
- ☒ Increases
- ☐ Decreases
- ☐ Remains unchanged

SAEED MDCAT

SAEED MDCAT TEAM

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Q : The sum of all the energies of atoms, molecules or ions within a system is called

- ☐ Enthalpy
- ☒ K.E of the system
- ☐ Internal energy
- ☐ Free energy

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SAEED MDCAT TEAM

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Q : There are how many conventional ways to change the internal energy of system

☐ 4

☒ 3

☐ 2

☐ 1

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SAEED MDCAT TEAM

 SAEEDMDCAT

Q : When  $\Delta E$  of a system ncreases, then which of the following possibilities is correct

- ☐ Temperature of the system can increase
- ☒ Phase change may take place
- ☐ Chemical reaction can occur
- ☐ All of the above

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Q : The expression  $\Delta E = q + w$  is

- ☐ First law of the thermodynamics
- ☒ Second law of the thermodynamics
- ☐ Third law of the thermodynamics
- ☐ Hess's Law

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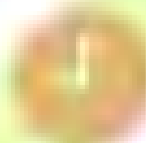


## QUIZ RESULT

Practice test -1 (Thermochemistry)



1



1 hr



1



1 hr



17



0%

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Correct



Unattempted



Incorrect



1/7

Q : Which of the following sets constitutes of all the state functions of system.



Temperature, Pressure, Work



Enthalpy, Work, Pressure



Enthalpy, Entropy, Internal Energy



Heat, Enthalpy, Volume

Explanation

SAEED MDCAT TEAM

Heat (Q) and Work (W) are not state functions.



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Correct



Unattempted



Incorrect



2/7

Q : The study of heat changes accompanied by a chemical reaction is called as



Thermodynamics



Thermochemistry



Chemical kinetics



All of these

Explanation

SAEED MDCAT TEAM

The study of heat changes accompanied by a chemical reaction is called as Thermochemistry

SAEEDMDCAT



Correct

:

Unattempted



Incorrect

:

3/7

Q : If an endothermic reaction is allowed to take place very rapidly in air the temperature of the surrounding air



Remain constant



Increases



Decreases



Remains unchanged

Explanation

SAEED MDCAT TEAM

If an endothermic reaction is allowed to take place very rapidly in air the temperature of the surrounding air decrease.



Correct



Unattempted



Incorrect



4/7

Q : The sum of all the energies of atoms, molecules or ions within a system is called



Enthalpy



K.E of the system



Internal energy



Free energy

Explanation

SAEED MDCAT TEAM

The sum of all the energies of atoms, molecules or ions within a system is called Internal energy

SAEEDMDCAT



Correct



Unattempted



Incorrect



5/7

Q : There are how many conventional ways to change the internal energy of system



4



3



2



1

Explanation

SAEED MDCAT TEAM

The two ways to change the internal energy of system. The energy can be exchanged between system and surrounding only in the form of work and energy.

$\Delta E = q + w \rightarrow$  First law of thermodynamics





Correct



Unattempted



Incorrect



6/7

Q : When  $\Delta E$  of a system increases, then which of the following possibilities is correct



A) Temperature of the system can increase



B) Phase change may take place



C) Chemical reaction can occur



D) All of the above

Explanation

When  $\Delta E$  of a system increases, then temperature of the system can increase, chemical reaction can occur and phase change may take place.



correct



7/7

Q : The expression  $\Delta E = q + w$  is



First law of the thermodynamics



Second law of the thermodynamics



Third law of the thermodynamics



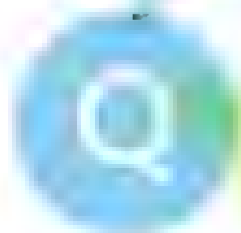
Hess's Law

Explanation

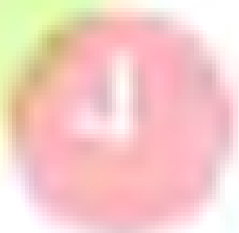
The expression  $\Delta E = q + w$  is First law of the thermodynamics

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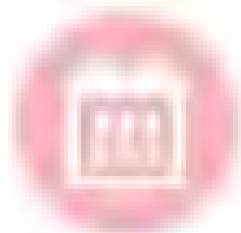
## Practice Test-2 (Thermochemistry)



1



Time



27-May-2021



05:00

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Q : The change in heat energy of a chemical reaction at constant pressure is called

- ☐ Bond energy
- ☒ Internal energy change
- ☐ Enthalpy change
- ☐ Heat of sublimation

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SAEED MDCAT TEAM

SAEEDMDCAT

Q : Absorption of heat occurs when

- ☐  $\text{NH}_3$  is synthesized from  $\text{N}_2$  &  $\text{H}_2$
- ☐  $\text{LiCl}$  is put in  $\text{H}_2\text{O}$
- ☐ Soda ash is put in water
- ☐  $\text{NH}_4\text{Cl}$  is put in  $\text{H}_2\text{O}$

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SAEED MDCAT TEAM

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Q : In a chemical reaction, if products are less stable than

- ☐  $\Delta H = +ve$
- ☐  $\Delta H = -ve$
- ☐  $\Delta H = 0$
- ☐  $\Delta H = \text{may be } +ve \text{ and } -ve$

SAEED MDCAT

SAEED MDCAT TEAM

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Q : The amount of heat evolved when one mole of  $\text{CH}_3\text{COOH}$  reacts with one mole of  $\text{NaOH}$  is

☐ = 57.4 kJ

☐ < 57.4 kJ

☐ > 57.4 kJ

☐ None

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SAEED MDCAT TEAM

SAEEDMDCAT



Q : The condition for standard enthalpy change are

- ☐ 1 atm and  $0^{\circ}\text{C}$
- ☐ 1 atm and  $25^{\circ}\text{C}$
- ☐ 760 torr and 273 K
- ☐ atm and 273 K

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Q : The enthalpy of formation of an ionic compound is  $-392 \text{ kJ / mol}$ . Total energy changes ( $\Delta H_x$ ) involved in the formation of gaseous ions from normal physical state is  $280 \text{ kJ / mole}$ . The enthalpy of lattice ( $\Delta H_{\text{att}}$ ) is

☐  $-112 \text{ kJ / mol}$

☐  $-672 \text{ kJ / mol}$

☐  $-267 \text{ kJ / mol}$

☐  $+224 \text{ kJ / mol}$

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Q : Which of the following statement is incorrect

- ☐  $\Delta H_f$  is determined by glass calorimeter
- ☐  $\Delta H_{latt}$  of NaCl is  $-787 \text{ kJ mol}^{-1}$
- ☐  $\Delta H_{comb}$  is determined by bomb calorimeter
- ☐  $\text{Na}_s \longrightarrow \text{Na}_g + e^- \Delta H_{3,1} = 105 \text{ kJ mol}^{-1}$

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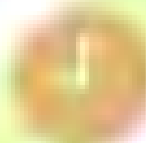


## QUIZ RESULT

Practice Test-2(Thermochemistry)



1



1 hr



1



100%



17



0%

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Correct



Unattempted



Incorrect



1/7

Q : The change in heat energy of a chemical reaction at constant pressure is called



Bond energy



Internal energy change



Enthalpy change



Heat of sublimation

Explanation

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The change in heat energy of a chemical reaction at constant pressure is called enthalpy change.

SAEEDMDCAT



correct



2/7

Q : Absorption of heat occurs when



$\text{NH}_3$  is synthesized from  $\text{N}_2$  &  $\text{H}_2$



$\text{LiCl}$  is put in  $\text{H}_2\text{O}$



Soda ash is put in water



$\text{NH}_4\text{Cl}$  is put in  $\text{H}_2\text{O}$

Explanation

$\text{NH}_4\text{Cl}$  is put in  $\text{H}_2\text{O}$  it is a endothermic process



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Correct



Unanswered



Incorrect



3/7

Q : In a chemical reaction, if products are less stable than



$\Delta H = +ve$



$\Delta H = -ve$



$\Delta H = 0$



$\Delta H =$  may be +ve and -ve

Explanation

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In endothermic process product are less stable than reactant.



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## Practice Test-2(Thermochemistry)



Correct



Unattempted



Incorrect



4/7

Q : The amount of heat evolved when one mole of  $\text{CH}_3\text{COOH}$  reacts with one mole of  $\text{NaOH}$  is



= 57.4 kJ



< 57.4 kJ



> 57.4 kJ



None

Explanation

Heat of neutralization of strong base with weak acid is less than  $-57.4 \text{ kJ/mol}$

1

2

3

4

5

6

7



## Practice Test-2(Thermochemistry)



Correct



Unattempted



Incorrect



5/7

Q : The condition for standard enthalpy change are

A

1 atm and 0°C

B

1 atm and 25 °C

C

760 torr and 273 K

D

atm and 273 K

Explanation

The condition for standard enthalpy change are 1 atm and 25 °C



SAEEDMDCAT

1

2

3

4

5

6

7



## Practice Test-2 (Thermochemistry)



Correct



Unattempted



Incorrect



6/7

Q : The enthalpy of formation of an ionic compound is  $-392 \text{ kJ / mol}$ . Total energy changes ( $\Delta H_x$ ) involved in the formation of gaseous ions from normal physical state is  $280 \text{ kJ / mole}$ . The enthalpy of lattice ( $\Delta H_{\text{latt.}}$ ) is

A

 $-112 \text{ KJ / mol}$ 

B

 $-672 \text{ KJ / mol}$ 

C

 $-267 \text{ KJ / mol}$ 

D

 $+224 \text{ KJ / mol}$ 

Explanation

$$\Delta H_f = \Delta H_x + \Delta H_l$$

$$\Delta H_l = \Delta H_f - \Delta H_x$$

$$\Delta H_l = -392 - 280 = -672 \text{ kJ mol}^{-1}$$

1

2

3

4

5

6

7





## Practice Test-2 (Thermochemistry)



Correct



Unattempted



Incorrect



7/7

Q : Which of the following statement is incorrect

A

$\Delta H_f$  is determined by glass calorimeter

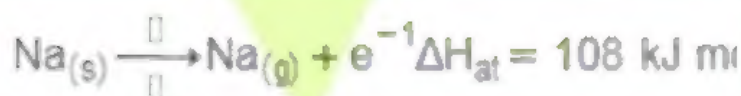
B

$\Delta H_{latt}$  of NaCl is  $-787 \text{ kJ mol}^{-1}$

C

$\Delta H_{comb}$  is determined by bomb calorimeter

D



Explanation

